UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/676,377	09/30/2003	Ulrich Neumann	06666/156001/USC-3345	3241

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EXAMINER
AMINI, JAVID A

ART UNIT	PAPER NUMBER
2628	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

PTOL-90A (Rev. 04/07)

	Office Action Summary	Application No.	Applicant(s)
		10/676,377	NEUMANN ET AL.
		Examiner	Art Unit
		Javid A. Amini	2628

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on <u>06 August 2007</u>.

2a) ☐ This action is **FINAL**.   2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) <u>25,26,29-31,33,34 and 37-39</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) <u>25,26,29-31,33,34 and 37-39</u> is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date <u>8/6/2007</u>.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

U.S. Patent and Trademark Office

PTOL-326 (Rev. 08-06)   Office Action Summary   Part of Paper No./Mail Date 20071015

Response to Arguments

The indicated allowability of claims 25-26, 29-31, 33-34, and 37-39 are withdrawn in

view of Applicant's submission of an information disclosure statement under 37 CFR 1.97(c)

with the fee set forth in 37 CFR 1.17(p) on 8/6/2007 prompted the new ground(s) of rejection

presented in this Office action.

Claims 1-24, 27-28, 32, 35-36, 40-49 are cancelled.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 25-26, 29-31, 33-34, and 37-39 are rejected under 35 U.S.C. 103(a) as being

unpatentable over H. S. Sawhney, et al. with title of "Video Flashlights – Real Time Rendering

of Multiple Videos for Immersive Model Visualization", hereinafter Sawhney, see cited PTO-

1449 dated 8/6/07.

Claim 29.

A method comprising: Sawhney teaches obtaining a three dimensional model of a three

dimensional environment (e.g., under section 2 on page 158 in the third paragraph), the three

dimensional model generated from range sensor (e.g., left col. line 5 on page 165), information

representing a height field for the three dimensional environment (e.g., a range finder device);

identifying in real time a region in motion (e.g., the video sequence shown moving objects in fig.

10) with respect to a background image (e.g., in fig. 10 see the background image) in real-time

video imagery information from at least one image sensor having associated position and

orientation information with respect to the three dimensional model (e.g., in fig. 10 see 3D

change image), the background image comprising a single distribution background dynamically

modeled from a time average of the real-time video imagery information (e.g., in fig. 10

illustrates the background image and a video sequence, on page 167); placing a surface that

corresponds to the moving region in the three dimensional model (e.g., in fig. 10 illustrates

moving objects); projecting the real-time video imagery information onto the three dimensional

model, including the surface, based on the position and orientation information (e.g., in fig. 10

illustrates moving objects); and visualizing the three dimensional model with the projected real-

time video imagery (e.g., in fig. 10 illustrates moving objects); wherein identifying a region in

motion in real time comprises subtracting the background image from the real-time video

imagery information (e.g., in fig. 10 illustrates on the right and left sides of the figure),

identifying a foreground object in the subtracted real-time video imagery information, validating

the foreground object by correlation matching between identified objects in neighboring image

frames, and outputting the validated foreground object (e.g., in fig. 10 illustrates outputting the

foreground object vs the background image at the right side of the figure); wherein identifying a

foreground object comprises identifying the foreground object in the subtracted real-time video

imagery information using a histogram-based threshold and a noise filter (e.g., on page 164 at the

right col. teaches the absolute value at each point can then be computed, and the result can be

thresholded in order to highlight intensity or feature differences between the current video image

and the reference image, on page 160 in fig. 3 clearly illustrates final rendered composite that has

been filtered the video pixels, and Sawhney does not disclose "a noise filter" Examiner

interpretation: the noise filter may be considered as a virtual camera view in fig. 3 (must be seen

in color image) that shows just the video pixels); wherein identifying a region in motion in real

time further comprises estimating the background image by modeling the background image as a

temporal pixel average of five recent image frames in the real-time video imagery information

(e.g., on page 164 at right col. teaches the reference background image needs to be constantly

updated during the day to reflect changing ambient illumination. Alternatively only moving

objects may be detected by comparing current image with an image taken a few seconds before.

The 2D moving object detection can be done in real time).

Sawhney does not explicitly specify (*see the underlined sections*) identifying a region in

motion in real time by modeling the background image as a temporal pixel average of five recent

image frames in the real time video imagery. However, Examiner takes an official notice for an

average of five recent frames, because Sawhney on page 161 under "A pseudo-code for the

rendering algorithm .." teaches as one of the parameters that a user may be indicated a number

for number of frames "frame number", and that number may be 5 image frames.

It would have been obvious to one of ordinary skill in the art at the time of the invention

to substitute applicant 's described structure, material, or acts for that described in the Sawhney's

sysem/method, in order to take advantage of the Video Flashlight system that is the real-time

rendering of multiple live videos overlaid precisely on a 3D model.

Claim 25.

Sawhney teaches the method of claim 29, wherein the surface comprises a two dimensional

surface (e.g., in fig. 5 illustrates 2D surfaces).

Claim 26.

The method of claim 25, wherein placing the two dimensional surface comprises: casting a ray

(Examiner's note: casting rays are: cast and traced *in groups* based on some geometric

constraints, and each ray is traced *separately,* so that every point (usually a pixel) on the display

is traced by one ray.) from an optical center (e.g., in fig. 5 at the top shows a casting rays with

respect to the bottom image that is considered every point on the display is traced by a ray, or in

fig. 6 shows the concept of casting and ray tracing phenomena), corresponding to the real-time

video imagery information, to a bottom point of the moving region in an image plane in the three

dimensional model; and determining a position, an orientation and a size of the two dimensional

surface based on the ray, a ground plane in the three dimensional model, and the moving region

(e.g., in fig. 10 illustrates a 3D model, and a moving region).

Claim 30.

The method of claim 29, further comprising tracking the position (e.g., see moving objects

represented as 3D masks. Only moving people or cars are detected) and orientation information

of the at least one image sensor in the environment with respect to the three dimensional model

in real-time (e.g., in fig. 10 illustrates a 3D model, see in 3Dchange image that detects moving

people and cars).

Claim 31.

The method of claim 30, wherein obtaining a three dimensional model of a three dimensional environment comprises generating the three dimensional model of the three dimensional environment (e.g., in fig. 8 illustrates a 3D model, see (d)).

Claim 33.

The system of claim 37, wherein the surface comprises a two dimensional surface (e.g., under section 2 at third paragraph teaches the 2D surface).

Claim 34.

Claim 34 is rejected with similar reason as set forth in claim 26, above.

Claim 37.

Claim 37 is rejected with similar reason as set forth in claim 29, above.

Claim 38.

Claim 38 is rejected with similar reason as set forth in claim 30, above.

Claim 39.

Claim 39 is rejected with similar reason as set forth in claim 31, above.
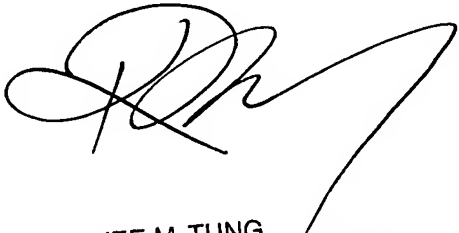
Conclusion

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Javid A. Amini whose telephone number is 571-272-7654. The

examiner can normally be reached on 8-4pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Kee Tung can be reached on 571-272-7794. The fax phone number for the

organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent

Application Information Retrieval (PAIR) system. Status information for published applications

may be obtained from either Private PAIR or Public PAIR. Status information for unpublished

applications is available through Private PAIR only. For more information about the PAIR

system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR

system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would

like assistance from a USPTO Customer Service Representative or access to the automated

information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Javid A Amini
Examiner
Art Unit 2628

J.A.

KEE M. TUNG
SUPERVISORY PATENT EXAMINER